## Claims

We claim:

1. A method for reducing fouling of a surface with aquatic organisms, wherein said method comprises applying, to a surface exposed to an aquatic environment, a compound that inhibits the attachment of aquatic organisms to the surface.

2. The method, according to claim 1, wherein said compound is selected from the group consisting of 2,3'-bipyridyl; 2,2'-bipyridyl; anabaseine; 3-benzylidene-anabaseine; 3-cinnamylidene-anabaseine; S-nicotine, R-nicotine; myosmine; S-anabasine; R-anabasine; nicotelline; nemertelline; 1-9-phenanthroline; 4'-Me2,3'-bipyridyl; 5'-Me2,3'-bipyridyl; 6'-Me2,3'-bipyridyl; 3-Me2,3'-bipyridyl; 4-Me2,3'-bipyridyl; 5-Me2,3'-bipyridyl; 6-Me2,3'-bipyridyl; and salts thereof.

3. The method, according to claim 1, wherein said compound is applied in a form selected from the group consisting of paints, stains, sealants, glazes, varnishes, coatings, coverings and glosses.

4. The method, according to claim 1, wherein said surface is selected from the group consisting of boat hulls, docks, buoys, locks, water intake pipes, drainage pipes, fish cages and jetties.

5. The method, according to claim 1, wherein said aquatic organism is selected from the group consisting of barnacle larvae and zebra mussel.

6. A compound useful for reducing fouling of a surface exposed to aquatic environments; wherein said compound is selected from the group consisting of 4'–Me2,3'–bipyridyl; 5'–Me2,3'–bipyridyl; and 6'-Me2,3–bipyridyl.

7. A composition useful for reducing fouling of surfaces exposed to aquatic environments, wherein said composition can be applied as a coating to a surface and said composition comprises a pyridyl alkaloid compound and a surface treatment.

8. The composition according to claim 7, wherein said compound is selected from the group consisting of 2,3'-bipyridyl; 2,2'-bipyridyl; anabaseine; 3-benzylidene-anabaseine; 3-cinnamylidene-anabaseine; S-nicotine; R-nicotine; myosmine; S-anabasine; R-anabasine; nicotelline; nemertelline; 1-9-phenanthroline; 4'-Me2,3'-bipyridyl; 5'-Me2,3'-bipyridyl; 6'-Me2,3'bipyridyl; 3-Me2,3'-bipyridyl; 4-Me2,3'-bipyridyl; 5-Me2,3'-bipyridyl; 6-Me2,3'-bipyridyl, and salts thereof.

9. The composition, according to claim 7 wherein said surface teatment is selected from the group consisting of paints, stains, sealants, glazes, varnishes, coatings, coverings and glosses.

10. A method for synthesizing bipyridyls comprising:

a) periodically adding an ethyl chloroformate to a bipyridyl carboxylic acid in the presence of a catalytic solvent to form an acid chloride intermediate;

b) reducing said acid chloride intermediate by adding sodium borohydride;

c) periodically adding methanol to the product of b) while heating from about 10° C to about 20° C; and

d) agitating at about 23° C to form 3-hydroxymethyl-2,3'-bipyridyl.

11. The method, according to claim 10, wherein said catalytic solvent is triethylamine.

12. The method, according to claim 10, wherein said adding occurs at about 0°C.

13. The method, according to claim 10, further comprising

e) extracting said 3-hydroxymethyl-2,3'-bipyridyl; and

f) purifying said 3-hydroxymethyl-2,3'-bipyridyl to remove a substantial portion of contaminants, by-products, and unreacted reagents.

14. The method, according to claim 13, further comprising

g) hydrogenating said purified 3-hydroxymethyl-2,3'-bipyridyl with a solution of methanol and hydrogen chloride.

15. The method, according to claim 14 wherein said hydrogenating is catalyzed with palladium on activated carbon.

16. A product produced by the method of:

a) periodically adding an ethyl chloroformate to a bypridyl carboxylic acid in the presence of a catalytic solvent to form an acid chloride intermediate;

b) reducing said acid chloride intermediate by adding sodium borohydride;

c) periodically adding methanol to the product of b) while heating from about 10° C to about 20° C;

d) agitating at about 23 °C;

e) extracting said 3-hydroxymethyl-2,3'-bipyridyl; and

f) purifying said 3-hydroxymethyl-2,3'-bipyridyl to remove a substantial portion of contaminants, by-products, and unreacted reagents.

g) hydrogenating said purified 3-hydroxymethyl-2,3'-bipyridyl with a solution of methanol and hydrogen chloride.

17. A method for synthesizing methyl, 2,3'-bipyridyls comprising

a) chlorinating methyl-anabaseine to yield methyl-3,3-dichloroanabaseine;

b) removing the -Cl substituents from methyl-3,3-dichloroanabaseine while reacting to form methyl-2,3'-bipyridyls.

18. The method, according to claim 17, wherein said chlorinating agent is selected from the group consisting of N-chlorosuccinimide and carbon tetrachloride.

19. The method, according to claim 17, further comprising:

c) purifying said methyl-2,3'-bipyridyls to remove contaminants, by-products, and unreacted reagents.

20. A product produced by the method of

a) chlorinating methyl-anabaseine to yield methyl-3,3-dichloroanabaseine; and

b) removing the -Cl substituents from methyl-3,3-dichloroanabaseine while reacting to form methyl-2,3'-bipyridyls.

21. A method for initiating paralysis in humans and animals comprising injecting a sufficient amount of a composition into said humans and animals, wherein said composition comprises a pyridyl alkaloid, a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

22. The method according to claim 21, wherein said pyridyl alkaloid is selected from the group consisting of 2,3'-bipyridyl; anabaseine; 3-benzylidene-anabaseine; 3-cinnamylidene-anabaseine; S-nicotine; R-nicotine; myosmine; S-anabasine; R-anabasine; nicotelline; 1-9-phenanthroline; 4'-Me2,3'-bipyridyl; 5'-Me2,3'-bipyridyl; 6'-Me2,3'bipyridyl; 3-Me2,3'-bipyridyl; 4-Me2,3'-bipyridyl; 5-Me2,3'-bipyridyl; 6-Me2,3'-bipyridyl; 2,4'-bipyridyl; 3,3'-bipyridyl; 3,4'-bipyidyl; 4,4'-bipyridyl; 2-(3-pyridyl)-pyrimidine, and 2'-Me2,3'-bipyridyl.